



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

December 19, 2018

10 CFR 50.73

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Unit 1
Facility Operating License No. NPF-90
NRC Docket No. 50-390

Subject: Licensee Event Report 390/2018-005-00, Manual Reactor Trip Due to Failure of Reactor Coolant Pump to Transfer to Normal Power

This submittal provides Licensee Event Report (LER) 390/2018-005-00. This LER provides details concerning a manual plant trip as a result of a Reactor Coolant Pump failing to transfer to its normal power supply. This condition is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A) as a manual actuation of the Reactor Protection System and the Auxiliary Feedwater Systems.

There are no new regulatory commitments contained in this letter. Please direct any questions concerning this matter to Kim Hulvey, WBN Licensing Manager, at (423) 365-7720.

Respectfully,

A handwritten signature in black ink, appearing to read "Paul Simmons", is written over a horizontal line.


Paul Simmons
Site Vice President
Watts Bar Nuclear Plant

Enclosure
cc: See Page 2

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cc (Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Watts Bar Nuclear Plant

NRC FORM 366 (04-2018)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020 <small>Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.</small>					
		LICENSEE EVENT REPORT (LER)								
1. Facility Name Watts Bar Nuclear Plant, Unit 1					2. Docket Number 05000390			3. Page 1 OF 5		
4. Title Manual Reactor Trip Due to Failure of Reactor Coolant Pump to Transfer to Normal Power										
5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
10	27	2018	2018	- 005	- 00	12	19	2018	NA	05000
9. Operating Mode			11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)							
1			<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(3)(i)		<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2201(d)		<input type="checkbox"/> 20.2203(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(1)		<input type="checkbox"/> 20.2203(a)(4)		<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
			<input type="checkbox"/> 20.2203(a)(2)(i)		<input type="checkbox"/> 50.36(c)(1)(i)(A)		<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
10. Power Level			<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 50.36(c)(1)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
21			<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.36(c)(2)		<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.46(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> 73.77(a)(1)	
			<input type="checkbox"/> 20.2203(a)(2)(v)		<input type="checkbox"/> 50.73(a)(2)(i)(A)		<input type="checkbox"/> 50.73(a)(2)(v)(D)		<input type="checkbox"/> 73.77(a)(2)(i)	
			<input type="checkbox"/> 20.2203(a)(2)(vi)		<input type="checkbox"/> 50.73(a)(2)(i)(B)		<input type="checkbox"/> 50.73(a)(2)(vii)		<input type="checkbox"/> 73.77(a)(2)(ii)	
			<input type="checkbox"/> 50.73(a)(2)(i)(C)		<input type="checkbox"/> OTHER		Specify in Abstract below or in NRC Form 366A			
12. Licensee Contact for this LER										
Licensee Contact Dean Baker, Licensing Engineer								Telephone Number (Include Area Code) (423) 452-4589		
13. Complete One Line for each Component Failure Described in this Report										
Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES	
14. Supplemental Report Expected <input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date) <input checked="" type="checkbox"/> No					15. Expected Submission Date			Month	Day	Year
								N/A	N/A	N/A
Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines) <p>On October 27, 2018, at 1533 Eastern Daylight Time(EDT), Watts Bar Nuclear Plant Unit 1 reactor was manually tripped due to the number 3 Reactor Coolant Pump (RCP) normal feeder breaker failing to close during the planned power transfer to unit power following startup. Concurrent with the reactor trip, the Auxiliary Feedwater (AFW) system actuated as designed. All safety systems responded as designed.</p> <p>During the post trip investigation, it was discovered that the normal feeder breaker for the number 3 RCP was left in the racked down (disconnected) position. The apparent cause of this event was operations personnel failed to properly implement the requirements of system status control procedures. Corrective actions include revising the system operating instructions controlling the RCP normal feeder breaker position and implementing additional training on system status control.</p> <p>This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), as a manual actuation of the Reactor Protection System (RPS) and the automatic actuation of the AFW system.</p>										

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
Watts Bar Nuclear Plant, Unit 1	05000390	YEAR	SEQUENTIAL NUMBER	REV NO.
		2018	- 005	- 00

NARRATIVE**I. Plant Operating Conditions Before the Event**

Watts Bar Nuclear Plant (WBN), Unit 1, was in Mode 1 at 21 percent rated thermal power.

II. Description of Event**A. Event Summary**

On October 27, 2018, at 1533 Eastern Daylight Time (EDT), Watts Bar Nuclear Plant Unit 1 reactor was manually tripped due to a the number 3 Reactor Coolant Pump (RCP) {EIS:P} normal feeder breaker {EIS:BKR} failing to close during the planned power transfer to unit power {EIS:EA} during startup. Concurrent with the reactor trip, the Auxiliary Feedwater (AFW) {EIS:BA} system actuated as designed. All safety systems responded as designed.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), as a manual actuation of the Reactor Protection System (RPS){EIS:JC} and an automatic actuation of the AFW system.

B. Status of structures, components, or systems that were inoperable at the start of the event and that contributed to the event

No inoperable systems contributed to this event.

C. Dates and approximate times of occurrences

Date	Time (EDT)	Event
10/27/2018	1533	Manually tripped Unit 1 due to Loss of RCP 3 during Bus Transfer. Initiated 1-E-0, Reactor Trip or Safety Injection, immediate actions.
10/27/2018	1536	Transition to 1-ES-0.1, Reactor Trip Response.
10/27/2018	1539	Main Steam Isolation Valves (MSIVs) closed to control Reactor Coolant System (RCS) cooldown.
10/27/2018	1652	Completed NRC Notification, EN 53697

D. Manufacturer and model number of each component that failed during the event

No equipment failures contributed to this event.

E. Other systems or secondary functions affected

Secondary systems functioned as expected

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NARRATIVE**F. Method of discovery of each component or system failure or procedural error**

During the post trip investigation, it was discovered that the normal feeder breaker for the number 3 RCP was left in the racked down (disconnected) position.

G. Failure mode, mechanism, and effect of each failed component

There were no failed components associated with this event.

H. Operator actions

Operations personnel promptly stabilized the plant following the plant trip.

I. Automatically and manually initiated safety system responses

Operations personnel tripped Unit 1, as procedurally required, when RCP 3 failed to transfer to its normal power source. During the trip response, the RCS was cooling down faster than desired and operations closed the MSIVs to control RCS cooldown.

III. Cause of the Event**A. Cause of each component or system failure or personnel error**

There were no equipment failures associated with this event. The apparent cause to this event was operations personnel failed to properly implement the requirements of system status control procedures.

B. Cause(s) and circumstances for each human performance related root cause

The apparent cause to this event was operations personnel failed to properly implement the requirements of system status control procedures.

IV. Analysis of the Event

During a normal start up at WBN, after the main generator has been synchronized to the grid, the power source for the RCPs is transferred from the Common Station Service Transformers (CSSTs, offsite power) to the Unit Station Service Transformers (USSTs) which are powered by the main generator. On October 27, 2018, prior to performing the above described power transfer, operations personnel had briefed on actions to perform in the event the power transfer failed, which included manually tripping the reactor. When the number 3 RCP failed to transfer from its alternate to normal power supply, a manual reactor trip was initiated. Operations personnel were able to promptly stabilize the plant following this trip.

**LICENSEE EVENT REPORT (LER)
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NARRATIVE

Subsequent to the event, it was determined that the configuration of the number 3 RCP normal feeder breaker was not being controlled using written instructions, which is not in accordance with plant procedures.

V. Assessment of Safety Consequences

This event is bounded by a partial loss of forced reactor coolant flow, which is an anticipated operational occurrence described in the Final Safety Analysis Report (FSAR). A probabilistic risk assessment for this event determined the incremental increase in core damage frequency to be very small.

- A. Availability of systems or components that could have performed the same function as the components and systems that failed during the event

All safety systems operated as designed during this event.

- B. For events that occurred when the reactor was shut down, availability of systems or components needed to shut down the reactor and maintain safe shutdown conditions, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident

Not applicable.

- C. For failure that rendered a train of a safety system inoperable, an estimate of the elapsed time from the discovery of the failure until the train was returned to service

Not applicable.

VI. Corrective Actions

This condition was entered into the TVA Corrective Action Program (CAP) and is being tracked under Condition Report (CR) 1460667.

A. Immediate Corrective Actions

Operations personnel promptly stabilized the plant following the reactor trip. Immediate corrective actions included procedure enhancements for all RCP board transfers to ensure required breakers are racked up and closing springs are charged with no relays actuated.

- B. Corrective Actions to Prevent Recurrence or to reduce probability of similar events occurring in the future

Additional training on status control processes will be provided to operations personnel.



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NARRATIVE

VII. Previous Similar Events at the Same Site

Manual reactor trips of WBN Unit 1 were reported in LER 390/2017-004-01 when the RCP power transfer failed during plant startup. These trips were the result of an incorrectly configured relay associated with the RCP Board 1C control circuit. While the result is similar, the cause that led to the need to trip the reactor is different than this earlier event.

VIII. Additional Information

There is no additional information.

IX. Commitments

There are no new commitments.